

Improved control apparatus and methods transfer information between devices, such as controllers and field devices, utilizing a modulator that generates a pulse width modulated (PWM) signal containing information to be transferred by a first of the devices, e.g., the controller, to the second device. A transformer or other inductive device transfers the PWM signal across the isolation barrier, where it is demodulated to analog form for application to the second device, e.g., the field device. Information transferred from the second device to the first device can be transferred in an amplitude modulated (AM) signal that utilizes, as its carrier, a fixed duty cycle output of the modulator that generates the PWM signal.